TEMPORARY COVERED SOURCE PERMIT - 0045-02-CT

Application for Modification No. 0045-19

Applicant: Grace Pacific Corporation

Facility: Makakilo Asphalt Plant

Located at: 91-920 Farrington Hwy
Kapolei, Hawaii

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SICC: 2951

Proposed Modification:

Grace Pacific Corporation (GPC) is proposing to add synthetic gas to the list of approved fuels to burn in the 725 kW Caterpillar diesel engine generator, de-rated to 544 kW. Currently the diesel engine generator burns fuel oil no. 2. No other changes are being proposed.

The application and the proposed modification satisfy the requirements for a minor modification as defined in HAR §11-60.1-81 and §11-60.1-103.

Background:

GPC currently operates a 334 ton per hour (TPH) hot-mix asphalt facility at their Makakilo Quarry in Kapolei, Oahu. The facility consists of a 334 TPH drum-mix asphalt concrete batch plant, one 544 kW diesel engine generator, aggregate processing, and a RAP crushing and screening system. The facility is currently permitted under Covered Source Permit (CSP) No. 0045-02-CT issued on November 9,

2004 and a modification issued on June 21, 2005.

Equipment for this Modification:

725 kW Caterpillar diesel engine generator, de-rated to 544 kW, model 3412, serial no. 2WJ01364

The facility has other permitted equipment, but only the diesel engine generator is affected by this modification.

Air Pollution Controls:

There are no proposed changes to the existing air pollution controls.

Applicable Requirements for the Modification:

Hawaii Administrative Rules (HAR):

Chapter 11-59, Ambient Air Quality Standards
Chapter 11-60.1 Air Pollution Control
- Subchapter 1, General Requirements
- Subchapter 2, General Prohibitions
  - 11-60.1-31 Applicability
  - 11-60.1-32 Visible Emissions
  - 11-60.1-38 Sulfur Oxides from Fuel Combustion
- Subchapter 5, Covered Sources
  - 11-60.1-81 Definitions
  - 11-60.1-103 Applications for Minor Modifications
- Subchapter 6, Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
  - 11-60.1-111 Definitions
  - 11-60.1-112 General Fee Provisions for Covered Sources
  - 11-60.1-113 Application Fees for Covered Sources
  - 11-60.1-114 Annual Fees for Covered Sources
  - 11-60.1-115 Basis of Annual Fees for Covered Sources
- Subchapter 8, Standards of Performance for Stationary Sources

Non-Applicable Requirements for the Modification:

BACT (Best Available Control Technology):

A BACT analysis is required for new or modified sources if the net increase in pollutant emissions exceeds significant levels as defined in HAR §11-60.1-1. This application is for a minor modification and there are no increases in emissions or emissions of pollutants not previously emitted. Therefore, a

BACT analysis is not required.

CAM (Compliance Assurance Monitoring):

The purpose of Compliance Assurance Monitoring (CAM) is to provide a reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard. Pursuant to 40 Code of Federal Regulations, Part 64, for CAM to be applicable, the emissions unit must: (1) be located at a major source; (2) be subject to an emissions limit or standard; (3) use a control device to achieve compliance; (4) have potential pre-control emissions that are 100% of the major source level; and (5) not otherwise be exempt from CAM. CAM is not applicable because the facility is not a major source.

CERR (Consolidated Emission Reporting Rule):

40 CFR part 51, Subpart A – Emission Inventory Reporting Requirements, determines applicability based on the emissions of each pollutant from any individual emission point within the facility that emits at or above the triggering levels. The facility was not subject to CERR prior to the proposed modification. Since the modification does not increase emissions, the facility will remain exempt from CERR.

MACT (Maximum Achievable Control Technology):

MACT is not applicable because the facility is not a major source of HAPs.

NESHAP (National Emission Standards for Hazardous Air Pollutants):

NESHAP is not applicable because the facility is not a major source of HAPs. Furthermore, MACT standards have not been established for the source category.

NSPS (Standards of Performance for New Stationary Sources):

NSPS is not applicable since there is no specific NSPS for the specific source category of diesel engine generators.

NSR (New Source Review):

NSR is not applicable since the facility is located in an attainment area and PSD applicability has been reviewed.

PSD (Prevention of Significant Deterioration):

Prevention of Significant Deterioration is not applicable because the proposed alternate fuel will lower the emissions of the drum-mixer and the facility.

Synthetic minor:

A synthetic minor is a facility that without limiting conditions, physical or operational, emits above the major source triggering levels as defined by HAR 11-60.1-1 for either criteria pollutant(s) or hazardous air pollutant(s). The facility is a synthetic minor, however this modification does not affect the determination.

Insignificant Activities/Exemptions:

No new insignificant activities were listed in this application.

Project Emissions:

Emission estimates from firing synthetic or liquefied petroleum gas were not performed. Instead, the AP-42 factors were compared to demonstrate that the emissions from burning synthetic or liquefied petroleum gas will be lower than fuel oil no. 2. Since emission limits, operational limits, and modeling are not being revised or reevaluated, this method to demonstrate compliance with the existing permit conditions is valid. As shown below, except for VOC emissions, the emission factors for firing natural gas are less than that of fuel oil no. 2. VOC emissions are slightly higher for natural gas and amount to an increase of 0.21 tons per year. This modest increase is within the threshold for minor modifications. The table below lists the AP-42 emission factors for diesel engine generators firing natural gas and fuel oil no. 2, sections 3.2, revised 7/00 and 3.4, revised 10/96, respectively.

Pollutant	AP-42 (lb/MMBtu)			Change in Emissions (T/yr)
	fuel oil no. 2	natural gas	synthetic gas	
NO_x	1.90	0.847	0.932	-7.75
CO	0.85	0.557		-2.16
SO_2	0.505	0.001		-3.71
PM_{10}	0.050	0.001		-0.36
VOC	0.090	0.118		0.21

The change in emissions were calculated using the heat input limit of 14,722 MMBtu/yr. The natural gas

emission factors for NO_x and CO are for operating at <90 percent, as the 725 kW diesel engine generator is de-rated to 544 kW. Emission factors for burning natural gas and synthetic gas are very similar except for NO_x. NO_x emissions from firing synthetic gas are approximately 10 percent higher than the NO_x emissions from firing natural gas. Increasing the natural gas AP-42 emission factor for NO_x by 10 percent, 0.932 lb/MMBtu, still results in an emission rate that is lower than fuel oil no. 2, 1.90 lb/MMBtu.

Air Quality Assessment:

Grace Pacific performed an ambient air quality assessment in a previous application. The assessment demonstrated that the facility will be in compliance with state and federal ambient air quality standards.

For this modification, an ambient air quality assessment is not required because the most of the emissions from firing synthetic or liquid petroleum gas are lower than fuel oil no. 2. The slight increase in VOC emissions does not require the air quality assessment to be reviewed because there is no ambient air quality standard for VOCs. Further, the stack parameters remain the same and the flow characteristics should not vary significantly from the values used in the original assessment. As such, the original ambient air quality assessment remains valid.

New/Revised Permit Conditions:

Under the current operating permit, the facility is limited to firing fuel oil no. 2 and a blend of spec used oil. With this modification, the permittee will also be allowed to burn synthetic or liquefied petroleum gases. The following condition will be revised.

Attachment II, Section C. Operational and Emission Limitations

1. Operational Restrictions

Current

e. The total fuel consumption of the diesel engine generator shall not exceed 107,460 gallons in any rolling twelve (12) month period.

Revised

e. The total heat input to the diesel engine generator shall not exceed 14,722 MMBtu in any rolling twelve (12) month period.

Since this facility will be capable of firing two different types of fuel in the diesel engines, the fuel consumption limit was changed to MMBtu/yr limit. A HHV of 137,000 Btu/gal was used for fuel oil no. 2 to convert gal/yr to MMBtu/yr.

2. Fuel Specifications

Current

a. Diesel Engine Generator

The diesel engine generator shall be fired only on fuel oil no. 2 with a maximum sulfur content not to exceed 0.5% by weight.

Revised

a. Diesel Engine Generator

The diesel engine generator may be fired on:

i. Fuel oil no. 2 with a maximum sulfur content not to exceed 0.5% by weight; or

ii. Synthetic or liquid petroleum gas.

Revised condition adds SNG and LPG as alternate fuels.

Attachment II, Section D. Monitoring and Recordkeeping Requirements

3. Fuel Consumption

a. Diesel Engine Generator

Current

Records shall be kept on the amount of fuel consumed by the diesel engine generator on a daily, monthly, and twelve (12) month rolling basis. The permittee shall take dipstick readings from the fuel oil storage tank supplying fuel to the diesel engine generator for the purpose of the fuel limitation specified in this Attachment, Special Condition No. C.1.e. Records shall include:

i. Date of the dipstick readings;

ii. Beginning and ending dipstick readings during start-up and shutdown of the portable drum-mix HMA plant each day;

iii. Total fuel consumption for each day;

iv. Total fuel consumption for each month;

v. Total fuel consumption on a twelve (12) month rolling basis; and

vi. Recorder's name and initials.

Revised

Records shall be kept on the amount of fuel consumed by the diesel engine generator on a daily, monthly, and twelve (12) month rolling basis. These records shall be used to demonstrate compliance with the heat input limitation specified in this Attachment, Special Condition No. C.1.e.

For the consumption of synthetic or liquefied petroleum gas, the permittee shall at its own expense install and maintain a non-resetting fuel metering system on the diesel engine generator.

For the consumption of fuel oil, the permittee shall take dipstick readings from the fuel oil storage

tank supplying fuel to the diesel engine generator.

Records shall include:

i. Date of the readings;
ii. Beginning and ending readings of the fuel meter and dipstick during start-up and shutdown of the portable drum-mix HMA plant each day;
iii. Total fuel consumption of each fuel type for each day;
iv. Total fuel consumption of each fuel type for each month;
v. Total fuel consumption of each fuel type on a twelve (12) month rolling basis; and
vi. Recorder's name and initials.

Revised condition adds a fuel meter for SNG/LPG on the diesel engine generator. Also revises condition to include recording the meter readings.

Attachment II, Section E. Notification and Reporting Requirements

6. Monitoring Reports
   a. Diesel Engine Generator

Current

i. The total fuel consumption (gallons) of the diesel engine generator on a monthly and 12-month rolling basis.

Revised

i. The total heat input to the diesel engine generator on a monthly and 12-month rolling basis.

Revised condition changes the wording of the condition from fuel consumption to heat input.

The Monitoring/Annual Emissions Report Form was also revised to reflect the change from fuel consumption to heat input.

Conclusion and Recommendation:

Firing the diesel engine generator on synthetic or liquefied petroleum gas in lieu of fuel oil no. 2 will decrease the actual emissions for most of the pollutants from the facility. There will be a insignificant increase in the potential VOC emissions, 0.21 tons per year. Since the facility has been operating in compliance with the current operating permit and the monitoring and reporting requirements remain the same, the facility should still remain in compliance with this modification.

A permit amendment to include synthetic or liquefied petroleum gas as an alternate fuel for the diesel engine generator is recommended.